ABSTRACT OF THE DISCLOSURE

An object of the present invention is to improve the decomposition at low temperatures of perfluorocompounds containing only fluorine as a halogen, such as CF_4, C_2F_6 and the like. In the present invention, a perfluorocompound containing only fluorine as a halogen is brought into contact with a catalyst comprising Al, Ni and W as catalytically active ingredients and comprising a mixed oxide or complex oxide of Ni and Al and a mixed oxide or complex oxide of W and Ni, in the presence of steam or a combination of steam and air at a temperature of 500 to 800°C to convert the fluorine in the perfluorocompound to hydrogen fluoride. Employment of the catalyst of the present invention improves the decomposition at low temperatures and hence makes it possible to decompose the perfluoro- compound at a high percentage of decomposition at a lower temperature.